

speculation, that if Farr's clerical staff were preparing the English Life Table, for which he probably used his most experienced clerks, he may have used less experienced clerks and shortcuts, such as abbreviated logarithmic tables.

The Lilienfeld's (4) documentation of Farr's contribution to epidemiology was concerned with the remarkably large number of *conceptual* and *methodologic* contributions, many of which are still part of the armamentation of today's working epidemiologists. Several additional concepts have been found in Farr's large body of work since the paper referred to by Dr. Petrakis was published.

Even if an error were found in every one of his tables, Farr's name would be writ large in the annals of epidemiology, demography, actuarial science, and public health. For an excellent account of Farr's work, we would highly recommend Eyler's masterful study (5). All of this is succinctly stated by D. Lilienfeld's paraphrase of a statement by Daniel Coit Gilman, the first president of The Johns Hopkins University: "So the same can be said for epidemiology: Whatever limitations are still obvious, let us not forget that men and methods make epidemiology, not statistical significance levels, nor computers, nor inferences, important as these are" (6).

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#### CANINE TRANSMISSIBLE VENEREAL TUMOR: A MODEL FOR KAPOSI'S SARCOMA?

In light of recent reports of an epidemic of an unusually severe form of Kaposi's sarcoma in homosexual men from the United States and Europe (1), we wish to call attention to a possible animal model, canine transmissible venereal tumor, which displays many similarities with Kaposi's sarcoma. First successfully transplanted in 1876 (2), transmissible venereal tumor has been the subject of considerable laboratory investigation, particularly in the area of tumor-associated antigen (3) and karyotype variation between tumor and normal cells (4). Transmissible venereal tumor occurs naturally worldwide as a neoplasm coitally transmitted between sexes; it is usually benign and undergoes spontaneous regression in otherwise healthy companion dogs (4). Stray dogs may serve as a reservoir (5, 6), and more severe expressions of transmissible venereal tumor may be expected in dogs of a suboptimal physiologic status, particularly in a promiscuous, scavenging, malnourished feral population (7).

Data on the presence of immunosuppression and the frequency of opportunistic infections are not available from previous reports of cases of spontaneously occurring transmissible venereal tumor. However, in an experimental study where transmissible venereal tumor was transplanted to eight dogs who were immunosuppressed by whole body x-irradiation, six developed metastatic disease; none of the eight experienced spontaneous regression. This development of metastatic disease was in significant ( $p < 0.05$ ) contrast to the transplantation results in eight control dogs, who were not x-irradiated (8).

In an ongoing study of 175 microscopically confirmed cases of transmissible venereal tumor from 15 distinct veterinary medical teaching facilities in North America, whose collaboration now spans 5 to 18 years, we observe a strong inverse correlation ( $-0.89, p = 0.0001$ ) between the hospital prevalence of transmissible venereal tumor and latitude (figure 1); positive correlations are seen with higher mean annual temperature ( $0.80, p = 0.001$ ) and increased rainfall ( $0.61, p = 0.02$ ). No particular association is seen between transmissible venereal tumor and county levels of farming/agriculture, manufacturing,

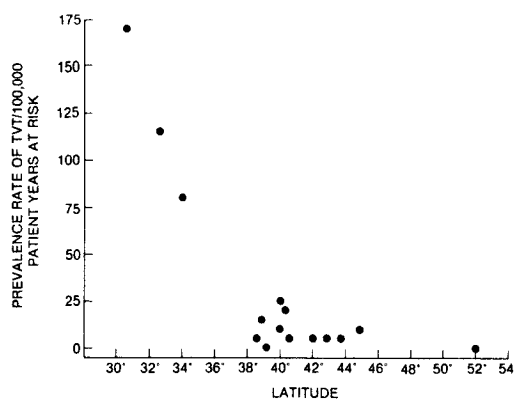


FIGURE 1. Canine transmissible venereal tumor (TVT) in North America.

elevation above sea level, human population density, or urban-rural designation. This pattern of increased occurrence in warmer areas is consistent with individual surveys from other parts of the world (4, 6). The reasons for an increase in prevalence in warmer climates remain unclear. Most reports present the view that transmissible venereal tumor is transmitted as a whole cell allograft (4, 9). However, C-type particles have been observed in electromicrographs of the tumor grown in culture (10) and *in vivo* (11), and older studies report transmission by cell-free filtrates (9).

The parallels between Kaposi's sarcoma and transmissible venereal tumor are numerous. Both neoplasms are considered to be sarcomas of uncertain histogenesis (1, 12), related to venereal transmission, more aggressive in the immunosuppressed host (1, 6, 8), endemic in tropical Africa (1, 9), and Kaposi's sarcoma seems to be associated with latitude and rainfall in Africa (13), similar to our observations on transmissible venereal tumor in North America. A mechanism in addition to coital transmission—or perhaps an alternate to it—may be mechanical transmission of transmissible venereal tumor via an insect vector, carrying either an intact cell and/or a virus. A similarity between the African distribution of Kaposi's sarcoma and the presence of insect vectors has been noted (14, 15). New directions in the laboratory research of transmissible venereal tumor may provide clues to the etiology and help explain the role of immunosuppression in increasing the severity of both tumors.

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# RE: "AN INVESTIGATION OF THE RELATIONSHIP BETWEEN STOMACH CANCER AND CEREBROVASCULAR DISEASE: EVIDENCE FOR AND AGAINST THE SALT HYPOTHESIS"

In their study of death certificates, Whelton and Goldblatt (1) found no evidence of a greater concordance between stomach cancer and hypertension or cerebrovascular disease than between lung cancer and hypertension or cerebrovascular disease. We confirm their finding in a mortality registry of Zoetermeer, a commuting town of 45,500 inhabitants near The Hague, The Netherlands. The Zoetermeer mortality registry was established along with the initiation of a multidisciplinary prevalence study of diseases of the circulatory, respiratory, urinary tract and musculo-skeletal systems in an open

population of 10,532 persons who were five years of age and older (2).

In this registry, we have more complete information than is usually available in compilations from official death certificates by the Netherlands' Bureau of Statistics. When a resident of Zoetermeer dies, the attending physician fills in an extra form giving additional information on all possibly relevant diseases. For example, contributory or secondary causes of death are stated for more than 80 per cent of the deaths due to malignancies of the lung or the stomach. Table 1 presents our data (primary and